

**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST- 5380**  
**FACILITY NAME CITY OF WARDEN WASTEWATER TREATMENT PLANT**

**SUMMARY**

The present municipal wastewater treatment facility was constructed in the late 1950's. It is comprised of three unlined facultative lagoons that are adjacent to the East Low irrigation canal (See Appendix C: Figure 2). The facility operation was modified in 1997 by the utilization of all lagoons for improved treatment during summer months. Poplars were planted in the spray field. Surface (dead level) ditches were used for irrigation to protect against spraydrift. Proposed for the year 2000 is a modification plan to include lined winter storage and additional initial lagoon treatment. In FY 1997 the City of Warden applied for and received a State Revolving Fund loan (\$82, 928) to develop a General Sewer Plan/Facility Plan for design of the upgrade to the City's collection and treatment/disposal system. The City did not submit any payment request for any of the work; therefore, at the City's request in FY 2000, the State cancelled the loan.

The City Council voted in 2003 to amend their Facility Plan for Water Reclamation and Reuse alternative for their wastewater treatment. The existing wastewater treatment is facultative lagoons with spray irrigation of alfalfa. However, due to leaking lagoons, most of the time during the growing season there was no water for irrigation. Ecology met with the City and their consultant regarding the proposed Water Reclamation project and funding options available for design and construction. The City received approval of an amended Facility Planning Report for a Water Reclamation facility in 2004. This new facility will consists of a 0.474 MGD activated sludge wastewater treatment facility with new headworks, mechanical screen, selector basins, oxidation ditch, secondary clarifiers, effluent filtration system, UV disinfection, aerobic digester, sludge thickener, emergency generator, lab/office building, and recharge lagoons. The City will retain the sprayfield as an alternative for irrigation of effluent from recharge basin #4 until final construction of Basin #5 and also as additional reliability for the Short Term Storage Basin. The final Facility Plan and Plans and Specification were approved in October 2005 with construction in 2006.

In 2004, the City Council voted to design and construct a Water Reclamation and Reuse Facility. This decision was made due to the concern for contamination of the local aquifer of the existing lagoons. These lagoons had been leaking for a number of years and the Department was working with the city to correct this problem. Due to local opposition to sell farm land for a larger spray irrigation site, the final decision was for ground water recharge of reclaimed water. The three existing treatment lagoons will provide an infiltration area of approximately 9.4 acres. These three lagoons will be converted to recharge basins after the new treatment plant and the new recharge basin are operational.

The permit will include a schedule of compliance to require the city to complete construction of the reclaimed water facility and a Water Reclamation and Reuse permit will be issued. At this time the city will cease using the existing lagoons and the liquid in the lagoons will be decanted (or pumped) to the new influent lift station, or plant drain lift station. The solids remaining in the lagoons will be left in the lagoons to air dry until they meet Class B Biosolids Standards and Vector Attraction Requirements. After this drying period, the biosolids will be cleared from the lagoons and stockpiled at the site.

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## **INTRODUCTION**

This fact sheet is a companion document to the draft State Waste Discharge Permit No **ST- 5380**. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Spokane Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments

<b>GENERAL INFORMATION</b>	
Applicant	City of Warden
Facility Name and Address	Wastewater Treatment Plant P.O. Box 428, Warden, WA 99857
Type of Treatment System:	Facultative Lagoons with Spray Irrigation
Legal Description of Application Area	Approx. 35 acres; NE¼ of the SE¼ of Sec. 10, and the W¼ of the SW¼ of Sec. 11, T. 17N, R. 30 E. W.M. Latitude: 46° 58' 33" N                      Longitude: 119° 01' 28" W.
Contact at Facility	Name: Steve Mattox, Operator Telephone #: (509) 349-2326
Responsible Official	Name: Mike Thompson Title: City Administrator Address: P.O. Box 428, Warden, WA 99857 Telephone #: (509) 349-2033 FAX # (509) 349-2027

## **BACKGROUND INFORMATION**

### *HISTORY OF THE COLLECTION AND TREATMENT SYSTEM*

The City of Warden (population 2000 census 2544) is located approximately 20 miles southeast of Moses Lake (See Appendix C: Figure 1) and within the Columbia Basin Reclamation and Irrigation project. Agriculture is the predominate industry in the region. Two potato processors, and several vegetable packers and storage facilities are located in a city owned commercial/industrial park area.

The present municipal wastewater treatment facility was constructed in the late 1950's. It is comprised of three unlined facultative lagoons that are adjacent to the East Low irrigation canal (See Appendix C: Figure 2). The facility operation was modified in 1997 by the utilization of all lagoons for improved treatment during summer months. Poplars were planted in the spray field. Surface (dead level) ditches were used for irrigation to protect against spraydrift. Proposed for the year 2000 is a modification plan to include lined winter storage and additional initial lagoon treatment. In FY 1997 the City of Warden applied for and received a State Revolving Fund loan (\$82, 928) to develop a General Sewer Plan/Facility Plan for design of the upgrade to the City's collection and treatment/disposal system. The City did not submit any payment request for any of the work; therefore, at the City's request in FY 2000, the State cancelled the loan.

The City Council voted in 2003 to amend their Facility Plan for Water Reclamation and Reuse alternative for their wastewater treatment. The existing wastewater treatment is facultative lagoons with spray irrigation of alfalfa. However, due to leaking lagoons, most of the time during the growing season there was no water for irrigation. Ecology met with the City and their consultant regarding the proposed Water Reclamation project and funding options available for design and construction. The City received approval of an amended Facility Planning Report for a Water Reclamation facility in 2004. This new facility will consists of a 0.474 MGD activated sludge wastewater treatment facility with new headworks, mechanical screen, selector basins, oxidation ditch, secondary clarifiers, effluent filtration system, UV disinfection, aerobic digester, sludge thickener, emergency generator, lab/office building, and recharge lagoons. The City will retain the sprayfield as an alternative for irrigation of effluent from recharge basin #4 until final construction of Basin #5 and also as additional reliability for the Short Term Storage Basin. The final Facility Plan and Plans and Specification were approved in October 2005 with construction in 2006.

The industrial area is composed primarily of agricultural related operations, including vegetable fresh pack operations (potatoes, onions), and two potato processors. The two processors (Washington Potato and Basin Frozen Foods) discharge their process wastewater to the City's separate industrial waste treatment facility. Their sanitary wastes are not discharged to the municipal system but are treated separately at the industrial site.

### *COLLECTION SYSTEM STATUS*

The original collection system was constructed in 1953 and expanded to serve approximately 60 % of the area of the city that is within the Urban Growth Area (UGA). The last capital improvement project occurred in 1986. Sewer service was extended to a future expansion area

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of the City's commercial and industrial area, and improvements were made to a lift station. The City of Warden sewer system includes a gravity wastewater collection system from residences east of County Line Road. The area west of County Line Road is collected by gravity to a pump station that discharges to the east gravity system. The collection system discharges through a headwork structure into an unlined stabilization pond system.

There are areas in the west side of the city that are currently served by septic systems and will require an additional lift station prior to connection to the system. This area has experienced septic system failures and should be considered in the development of the Comprehensive Sewer Plan/Facility Plan for collection and treatment. The collection system may include two lift stations, 38,175 feet of 8-inch, 830 feet of 6-inch, and 4780 feet of 10-inch sewer mains.

*TREATMENT PROCESSES*

The previous municipal wastewater treatment facility was constructed in 1955, with a five-acre facultative lagoon. It was enlarged in 1959 with an additional 4.7 acres of lagoon. The three unlined facultative lagoons and storage lagoon are adjacent to the East Low irrigation canal. Flows during the summer are diverted to the northern most lagoon for treatment prior to being pumped to the spray irrigation site (See Appendix C: Figure 1). During the winter months, flows are diverted to the southern most lagoon and all cells are used in series to provide for winter storage.

The City Council voted in 2003 to amend their Facility Plan for Water Reclamation and Reuse alternative for their wastewater treatment. The existing wastewater treatment is facultative lagoons with spray irrigation of alfalfa. However, due to leaking lagoons, most of the time during the growing season there was no water for irrigation. Ecology met with the City and their consultant regarding the proposed Water Reclamation project and funding options available for design and construction. The City received approval of an amended Facility Planning Report for a Water Reclamation facility in 2004. This new facility will consist of a 0.474 MGD activated sludge wastewater treatment facility with new headworks, mechanical screen, selector basins, oxidation ditch, secondary clarifiers, effluent filtration system, UV disinfection, aerobic digester, sludge thickener, emergency generator, lab/office building, and recharge lagoons. The City will retain the sprayfield as an alternative for irrigation of effluent from recharge basin #4 until final construction of Basin #5 and also as additional reliability for the Short Term Storage Basin. The final Facility Plan and Plans and Specification were approved in October 2005 with construction in 2006.

In 2004, the City Council voted to design and construct a Water Reclamation and Reuse Facility. This decision was made due to the concern for contamination of the local aquifer of the existing lagoons. These lagoons had been leaking for a number of years and the Department was working with the city to correct this problem. Due to local opposition to sell farm land for a larger spray irrigation site, the final decision was for ground water recharge of reclaimed water. The three existing treatment lagoons will provide an infiltration area of approximately 9.4 acres. These three lagoons will be converted to recharge basins after the new treatment plant and the new recharge basin are operational (See Appendix C: Figure 2).

The permit will include a schedule of compliance to require the city to complete construction of the reclaimed water facility by April 2010. At this time the city will cease using the existing

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lagoons and the liquid in the lagoons will be decanted (or pumped) to the new influent lift station, or plant drain lift station. The solids remaining in the lagoons will be left in the lagoons to air dry until they meet Class B Biosolids Standards and Vector Attraction Requirements. After this drying period, the biosolids will be cleared from the lagoons and stockpiled at the site.

The City's Facility Plan identified the Boulder Park Inc. as the selected disposal site. Boulder Park is a privately owned biosolids utilization facility with approximately 40,000 acres. The biosolids disposal can be performed by the City or the City can require the contractor to dispose of the solids in an approved manner. It is assumed that the City will obtain the permit for biosolids disposal and the contract for an approved disposal site; however, the contractor will be responsible for physically removing the biosolids from the lagoon and hauling them to the permitted disposal site.

*DISTRIBUTION SYSTEM (SPRAYFIELD)*

During the summer, treated wastewater from cell #3 gravity flows to a nearby irrigation pond for temporary storage prior to irrigation of the sprayfield. Approximately 25 acres of the sprayfield are covered by a center pivot sprinkler system and the remaining 7 acres are irrigated using hand moved sprinklers. The yield, in 1994, was less than 4 tons of alfalfa per acre or a total of less than 32 tons of hay.

Discharge from the irrigation storage pond is to the center pivot and to one of three handline areas. The handline areas (approx. 7 acres) consists of the "corners" of city owned land that is irrigated with effluent and fresh well water. The center pivot portion is approximately 25 acres that has been irrigated from effluent that can be mixed with well water from a well on the property. The facility operation was modified in 1997 by the utilization of all lagoons to improve treatment during summer months by increasing detention times. In 1995 the entire spray field was removed from alfalfa production and planted to poplar trees. Surface (dead level) ditches were used for irrigation to protect against spraydrift. Since there was no effluent discharged to the sprayfield in 1995, the sprayfield was returned to irrigation with the pivot and planted in corn for the 1999 crop season.

Information based on crop water requirements only, shows that the existing 35 acres owned by the City is not enough to dispose of the total wastewater volume during the year. At least 50 acres may be needed.

The new Water Reclamation and Reuse facility will retain the irrigation system for the by-pass basin as back up reliability and for the reclaimed water recharge basins until approval and construction of the fifth recharge basin. Discharge from the by-pass and recharge basins is to the center pivot and to one of three handline areas.

The existing irrigation pump will be relocated to the southeast corner of recharge basin #4 and re-connected to the existing irrigation piping. Irrigation to the center pivot portion is from effluent that can be mixed with well water. Columbia Basin Project (CBP) water is currently being used as a source of blending water for this land disposal.

### *RESIDUAL SOLIDS*

The treatment facilities remove solids during the treatment of the wastewater by settling in the facultative lagoons. There are no bar screens, scum or grit removal units for removal of incidental solids (rags, scum, and other debris) as part of the routine maintenance of the equipment. Grit, rags, scum and should be removed, drained and disposed of as solid waste at the local landfill. There are no records that settled solids in the lagoons have ever been removed. According to the permit application, sludge has not been removed since 1955. As a requirement in this permit, the sludge depths in the lagoon will be measured and a disposal plan will be developed and reviewed by the Department. Sludge that will be land applied requires a disposal permit from the local county health department.

### *GROUND WATER*

Soils Report (Hong West, 1992) indicated that a layer of silt loam (27-inches) covers a hardpan caliche layer with moderate to low permeability. The loam layer at the caliche boundary was found to be discolored and mottled which could indicate a seasonally perched water table possibly caused by over irrigation. The caliche aquatard that underlies the area daylights into the canal. The 1992 report showed no visible evidence of seepage to the canal during the winter when there is no water in the canal. A piezometer bank has been installed to identify the gradient of the water movement and the City of Warden proposes to drill three inspection holes using air rotary methods to identify the layering of the soils and the location of the primary aquitard. The water balance evidence shows that the seepage from the lagoon is through the bottom of the lagoon. Because of these seepage losses, there is little or no water available for irrigation of crops.

Seepage tests were performed on the first lagoon from January 31 through February 28, 1996. The lagoon was ice covered and all water was diverted to the third lagoon to ensure that the seepage test did not receive additional water or have any potential for evaporation. The average seepage loss was estimated at 0.048 million gallons per day. However, the direction of the infiltrated wastewater was not determined because no monitoring well system had been installed. The possibility of contaminating existing ground water supply was also not determined because of the lack of monitoring wells.

Ground water consists of the unconfined aquifer that collects above the first basalt formation and comes to the surface as wasteways and drainage ditches. No existing wells were identified or new monitoring wells drilled into the upper aquifer to determine the actual ground water elevation or direction of flow. Therefore, it is important to investigate the need for and to install monitoring wells in the near surface aquifer to insure that the wastewater treatment facilities are not contaminating the water resources. The Second Addendum to the City of Warden's Industrial Hydrogeologic Study includes a brief review of the ground water issues near the municipal facility. The Study identifies an area to the north east of the lagoons as a possible seepage area of ground water, local irrigation, and lagoon infiltration. This area is identified as Point "P" on the Hydrogeologic map (see Appendix C). The permit includes a monitoring technique (Stiff Diagram) to determine if this seepage does include lagoon infiltration (see Permit Condition S2.B "Wastewater and Ground Water Monitoring Test").

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The second aquifer is confined and provides most of the potable water for the City of Warden. Warden has three wells drilled to 350 feet in depth with a combined capacity of 3000 gallons per minute. Limited draw down is experienced during summer pumping of wells #4 and #5. Well #6 water levels have declined considerably since development of the well.

Prior to when the reclaimed water facility is completed, the three existing treatment lagoons and the storage lagoon will be converted to reclaimed water recharge basins. After removal of the sludge, the bottom will be scarified to promote infiltration. The hydrogeological evaluation estimated the limiting long term infiltration rates as 0.70 gpd/ft<sup>2</sup>. A slightly more conservative rate of 0.51 gpd/ft<sup>2</sup> was actually used to size basins. The fifth recharge basin will be constructed and remove the sludge from the existing lagoons in order to improve the infiltration rate when treatment lagoons are converted to recharge basins.

*PERMIT STATUS*

The previous permit for this facility was issued on July 31, 2001. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, and Fecal Coliform bacteria.

An application for a permit was submitted to the Department on March 9, 2006 and accepted by the Department on March 31, 2006.

*SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

The facility last received an inspection on June 8, 2005

During the history of the previous permit, the Permittee has not remained in compliance based on the testing schedules that is to be reported on the Discharge Monitoring Reports (DMRs), other submittals required in the Special Conditions, and inspections conducted by the Department.

To ensure compliance with Ground Water Standards, the permit will also include a compliance schedule for construction of the Reclaimed Water facility as identified in an approved Facilities Plan/Engineering Report.

*WASTEWATER CHARACTERIZATION*

The concentration of pollutants in the discharge as reported in the NPDES application and in discharge monitoring reports were changed to meet Reclaimed Water Reuse criteria. Even though irrigation effluent limits will remain the same as the previous State Waste Discharge permit, the land application discharge will improve due to treatment in the reclaimed water facility.

Parameter	Permit Application		WWTP
	Effluent Concentration		Effluent Concentration
	Maximum	Average	Average
Flow	250,000 gpd	142,882 gpd	210,000 gpd

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BOD (5 day)	280 mg/L	66.71 mg/L	270 mg/L
TSS (average)	150 mg/L	89.25 mg/L	200 mg/L
Fecal Coliform	30,000 #/100 mL	0 #/100 mL	49,167 cfu/100 mL
pH (maximum/minimum)	9.6 to 7.0		9.6 to 7.2
Total Dissolved Solids	596 mg/L	406 mg/L	406 mg/L
Nitrate + Nitrite-N	0.0 mg/L	0.6 mg/L	0.1 mg/L
Total Kjeldahl N	54 mg/L	17.4 mg/L	33.4 mg/L
Chloride	71 mg/L	33 mg/L	54.2 mg/L
Ammonia-N	35.2 mg/L	17.63 mg/L	17.6 mg/L
Sulfate	71 mg/L	19.7 mg/L	45.4 mg/L

The following table shows the testing results for the concentrations in the ground water monitoring wells.

Parameter	Effluent Concentration (Range)			
	Low Canal Road "8" S.E.	Low Canal Road "U" S.E.	USBR Drain	Mix Cell #4
Conductivity (micromho/cm)	140	138 to 142	298 to 350	620 to 855
Fecal Coliform (meq/L)	2.0 to 13.0	800 to 2,400	1.0 to 2.0	2,200 to 50,000
Calcium (meq/L)		0.9 to 1.02	1.4 to 1.6	1.3
Chloride (meq/L)		0.01	0.07 to 0.11	1.3 to 1.52
Magnesium (meq/L)		0.392 to 0.41	1.88 to 2.02	0.72 to 1.17
Potassium (meq/L)		0.0	0.1	0.4 to 0.5
Sodium (meq/L)		0.1	0.2 to 0.4	4.2 to 4.7
Sulfate (meq/L)		0.14 to 0.29	0.517 to 0.59	0.67 to 1.59

### **WATER RIGHTS STATUS**

The approved facility plan identifies the Permittee as a generator of the reclaimed water and RCW 90.46.120 gives the Permittee exclusive right to any water generated by the wastewater treatment facility. After the reclaimed water facility is complete and operational the use and distribution of reclaimed water is exempted from the water right permit requirements of RCW 90.03.250 and 90.44.060.

### **SEPA COMPLIANCE**

The SEPA document as proposed in the Approved Water Reclamation and Reuse Facility Plan has identified reclamation and ground water augmentation as the reuse option to protect local ground water. The permittee is directed by a compliance schedule to complete construction of the new water reclamation and reuse facility by June 30, 2010.

### **PROPOSED PERMIT LIMITATIONS**

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the sprayfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

#### *DESIGN CRITERIA*

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The existing design criteria for this treatment facility are taken from October 14, 2005 facility plan by Gray & Osborne, Inc. and are as follows:

**Table 1: Design Criteria.**

Parameter	Design Quantity
Average flow for the maximum month	0.25 MGD
BOD <sub>5</sub> influent loading	385 lb./day
TSS influent loading	385 lb./day
Design Population	2660

#### *TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

1. Wastewater shall be applied via spray irrigation at agronomic rates for total nitrogen and water, and at rates for other wastewater constituents that are protective of the background ground water quality.
2. Total nitrogen and water shall be applied to the sprayfields as determined by a current Irrigation and Crop Plan.

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3. The system must be operated so as to protect the existing and future beneficial uses of the ground water and not cause a violation of the ground water standards.

**Table 3: Technology-Based Effluent Limitations**

Parameter	Average Monthly	Maximum Daily
BOD <sub>5</sub>	45 mg/L	65 mg/L
TSS	45 mg/L	65 mg/L
Fecal Coliform	200/100 mL	400/100 mL
pH	Shall not be outside the range of 6.0 to 9.0 s.u.	

*GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

**Table 4: Ground Water Quality Criteria**

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate (as N)	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC. The lagoons and land application site does not have any well system to monitor ground water. Therefore, the Department will use the criteria expressed in the regulation in the proposed permit. The Department in 1998 reviewed the Warden Industrial Hydrogeologic Study. The Study included an addendum with information on the ground water at the municipal treatment lagoons. The Department's review concluded that the Study lacked any actual information on the near surface ground water above the basalt. Without ambient monitoring data in the shallow

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ground water aquifer at this site, it is not possible to determine if the wastewater treatment facilities are contaminating the water resources of the state. A water balance completed in the Facility Plan indicates that most of the wastewater is lost to evaporation and seepage. The Department is concerned that the seepage is to an unknown shallow ground water source. It is important that the Permittee investigate the direction of the seepage and the quality of the affected ground water.

Pollutant concentrations in the proposed discharge exceed ground water quality criteria with technology-based controls, which the Department has determined to be AKART. A limit based on ground water criteria is established and applied at the end of treatment.

The resultant effluent limits were as follows:

**Table 5: Effluent Limitations.**

Parameter	Maximum Monthly	Maximum Daily
Fecal Coliform Bacteria	< 200 /100 mL	< 400 /100 mL
pH	Shall not be outside the range 6.0 to 9.0	
Total Nitrogen	At agronomic rates according to the irrigation and crop plan. See Special Condition S11. For details.	

## **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

### *INFLUENT AND EFFLUENT MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies takes into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

### *CROP MONITORING*

The monitoring and testing schedule is detailed in the permit under Condition S2. Specified monitoring frequencies takes into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

### *SOIL MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies takes into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

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**GROUND WATER MONITORING**

The monitoring of ground water at the lagoon and spray irrigation sites is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. Since there is no well system to monitor ground water and seepage test indicates a major loss of wastewater through the bottom of the lagoons, the Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality and install monitoring wells as determined by the final municipal hydrogeologic report. Monitoring of the ground water at the lagoon and irrigation site boundaries and within the lagoon site is an integral component of such an evaluation. After completion of the ground water monitoring study and construction of monitoring wells, the Permittee shall request the Department to modify the permit to include a requirement to monitor the ground water according to the following schedule:

"The sampling points for ground water will be in the constructed monitoring wells as identified in the ground water study."

Parameter	Units	Sampling Frequency	Sample Type
Ferrous Iron <sup>1</sup>	Present /Absent	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
pH <sup>1</sup>	Standard Units	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Conductivity	Micromho/cm	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Total Coliform	CPU/100 ml	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Water Level Elevation <sup>1</sup>	Feet, MSL	1/month <sup>2</sup> ; 4/year <sup>3</sup>	Measurement
Temperature <sup>1</sup>	°C	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Chloride	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Total Dissolved Solids	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
NO <sub>3</sub> (as N)	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
Ammonia (as N)	mg/L	1/month <sup>2</sup> ; 4/year <sup>3</sup>	grab
<sup>1</sup> Field test			
<sup>2</sup> Once per month shall be for the first twelve consecutive months after permit issuance			
<sup>3</sup> Four per year shall start after the first twelve consecutive months of testing results have been submitted. Testing shall be done in: January, April, July, and October			

The Permittee shall monitor (1) the wastewater in the treatment lagoons, (2) the ground water seepage area north east of the lagoons (tributary to Lind Coulee) and (3) the USBR East Low Canal downstream of the lagoons as identified in the final Facility Plan according to the following schedule:

Parameter	Units	Sampling Frequency	Sample Type
Cations and anions <sup>a</sup>	mg/L, meq/L	Quarterly <sup>b</sup>	grab

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Parameter	Units	Sampling Frequency	Sample Type
<sup>a</sup> Cations (Mg, Ca, K, Na) and anions (HCO <sub>3</sub> , Cl, SO <sub>4</sub> )			
<sup>b</sup> Quarterly for the first year of the permit; Jan.-Mar., Apr.-June, July-Sept.-Oct.-Dec.			

The permittee shall develop a Stiff Diagram (see Appendix C for example) using the wastewater, seepage area, and canal monitoring data. The plotted data will show graphically the relationship of the seepage area water and canal water to the wastewater in the lagoons.

The monitoring of the ground water at the lagoon site is required to verify that a ground water quality problem exists. This information is important for evaluating eligibility in state or federal grant funding applications for lining the lagoons.

### **OTHER PERMIT CONDITIONS**

#### *REPORTING AND RECODKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

#### *FACILITY LOADING*

The design criteria for the existing treatment facility are taken from the June 1999 Comprehensive Sewer Plan and Facility Plan prepared by Irrigation & Hydraulics Unlimited. The City demonstrated in the approved Facility Plan that the water reclamation and reuse treatment facility has adequate design capacity for existing and future flows and waste loadings. The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant [WAC 173-216-110(4)]. The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and engineering report [WAC 173-216-110(5)]. The permit requires the Permittee to submit annual reports comparing the actual flow and waste loadings to the design criteria for the plant.

#### *IRRIGATION AND CROP MANAGEMENT PLANS*

The irrigation and crop management plan is required to support the engineering report/facility plan and operations and maintenance manual. This plan shall include a consideration of wastewater application at agronomic rates and should describe and evaluate various irrigation controls.

#### *OPERATIONS AND MAINTENANCE*

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

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*RESIDUAL SOLIDS HANDLING*

To prevent water pollution the Permittee is required in permit condition S6. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

*PRETREATMENT*

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

An industrial user survey will be required to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations (40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act), with state regulations (Chapter 90.48 RCW and Chapter 173-216 WAC), and with local ordinances.

*COMPLIANCE SCHEDULE*

The Permittee shall complete construction of the proposed Water Reclamation and Reuse facility and infiltration basins and achieve full operation according to the following schedule:

Complete Funding Package and Advertise for Bids .....September 30, 2007

Award Construction Bids.....March 31, 2008

Complete Construction .....December 31, 2009

Facility Fully Operational .....June 30, 2010

A new permit will be developed and issued prior to completion of construction of the Water Reclamation and Reuse facility as per RCW 90.48 and RCW 90.46, and in compliance with the laws and regulations of the Washington State Department of Health.

*GENERAL CONDITIONS*

General Conditions are based directly on state laws and regulations and have been standardized for all waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels

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stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

**RECOMMENDATION FOR PERMIT ISSUANCE**

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for 4 years.

**REFERENCES FOR TEXT AND APPENDICES**

Comprehensive Sewer Plan for the City of Warden, Washington, prepared by Kenneth C. Mitchell of Irrigation & Hydraulic Unlimited, Yakima WA. June 1999

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

## **APPENDICES**

### *APPENDIX A: PUBLIC INVOLVEMENT INFORMATION*

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) on May 2, 2006 in the Columbia Basin Herald to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Eastern Regional Office  
4601 North Monroe  
Spokane, WA 99205

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 329-3537, or by writing to the address listed above.

This permit was written by Gerald Anderson.

*APPENDIX B: GLOSSARY*

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation**--The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of the collection or treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

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**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

**Distribution Uniformity**--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Soil Scientist**--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy,

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crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Coliform Bacteria**--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

**Total Dissolved Solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

*APPENDIX C: FIGURES AND DRAWINGS*

*APPENDIX D: RESPONSES TO COMMENTS*